MULTIMEDIA EMULATION OF PHYSICAL REEL HARDWARE IN PROCESSOR-BASED GAMING MACHINES

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to U.S. Provisional Patent Application No. 60/858,741, filed on Nov. 13, 2006, which is incorporated herein by reference in its entirety and for all purposes.

TECHNICAL FIELD

[0002] The present invention relates generally to wager based gaming machines, and more specifically to the multimedia emulation of physical reel hardware on processor-based gaming machines.

BACKGROUND

[0003] A "mechanical reel" type gaming machine can refer to a slot machine having traditional physical rotating reels with their associated latches and mechanical parts. A mechanical reel usually has a fixed number of reel symbols disposed about a reel strip attached about the circumference of a wheel. In a pure mechanical gaming machine, a motor, spring, or other mechanical system physically rotates or spins the wheel or reel until it stops at a particular rotational position or "reel stop," and a particular reel symbol rests in view of a player to indicate an outcome for that reel for that given reel game. In many older machines, the reels were spun by potential energy first stored in a spring-loaded mechanism wound and then actuated by the pull of a traditional pull-arm handle. Each reel was stopped at a random position by a mechanical device. The slot machine sensed a combined reel outcome, usually along a central payline, by sensing the physical position of each reel. A payout could then be made to the player if the combined outcome was a winning combination.

[0004] Later versions of such gaming machines include "electromechanical" reel type gaming machines. Such electromechanical reel type gaming machines could include the same or similar physical rotating reels, with the starting, spinning and stopping of each such electromechanical reel being controlled by a stepper motor. One or more microprocessors are used to control the various reel stepper motors. The use of microprocessors and stepper motors generally allows for a wide expansion of "virtual" reel stops for each rotating reel, such that larger payouts and jackpots can be realized over purely mechanical reel type gaming machines. Although these electromechanical reel type gaming machines do use processors to some degree, the use of clearly physical reels for wagering games is appealing to many players. In fact, there are many gaming machine players who tend to play only or mostly on gaming machines that have physical reels.

[0005] Although popular throughout recent history, these mechanically driven reel slot machines are being steadily replaced by electronic gaming machines, some of which are specifically adapted to simulate such reel based games on a video display, such as a cathode-ray tube, liquid crystal display ("LCD"), flat panel display or the like. Processor-based gaming machines are becoming the norm. One reason for their increased popularity is the nearly endless variety of games that can be implemented using processor-based technology. These processor-based gaming machines permit the operation of more complex games, advance player tracking, improve security, permit wireless communications, and add a host of digital features that are not possible on the traditional mechanical and electromechanical reel type gaming machines.

[0006] In a typical electronic gaming machine, such as a processor-based gaming machine adapted to simulated multiple rotating reels, a game play is initiated through a player wager of money or credit, whereupon the gaming machine determines a game outcome, presents the game outcome to the player and then potentially dispenses an award of some type, including a monetary award, depending upon the game outcome. Electronic and microprocessor based gaming machines can include a variety of hardware and software components to provide a wide variety of game types and game playing capabilities, with such hardware and software components being generally well known in the art. A typical electronic gaming machine can include hardware devices and peripheral such as bill validators, coin acceptors, card readers, keypads, buttons, levers, touch screens, coin hoppers, player tracking units and the like. In addition, each gaming machine can have various audio and visual display components that can include, for example, speakers, display panels, belly and top glasses, exterior cabinet artwork, lights, and top box dioramas, as well as any number of video displays of various types to show game play and other assorted information.

[0007] Advances in technology have resulted in processor-based gaming machines that are increasingly better at emulating actual mechanical reels from a mechanical or electromechanical reel-based gaming machine. Various efforts to simulate or realistically emulate mechanical reels on a video screen of a processor-based gaming machine abound. Some of such efforts can be found at, for example, U.S. Pat. No. 6,887,157, entitled "Virtual Camera and 3-D Gaming Environments in a Gaming Machine," as well as at Japanese Patent Publication No. 2006346226A2, entitled "Game Device and Game Program." Another reference that involves rotating reel games having processors is U.S. Patent Publication No. 2005/0285337, entitled "Dynamic Generation of a Profile for Spinning Reel Gaming Machines," and there are numerous other known instances of machines and systems involving rotating reel games that are controlled at least in part by a microprocessor.

[0008] While existing designs and systems for providing realistic reel games on processor-based gaming machines, and particularly the presentation of spinning reels on the video displays thereof, have been adequate in the past, improvements are usually welcomed and encouraged. In light of the foregoing, it is thus desirable to develop improved processor-based gaming machines that provide even better emulation of physical reels for reel based games played thereupon.

SUMMARY

[0009] It is an advantage of the present invention to provide processor-based gaming machines that are adapted to present realistic emulations of reel-based games thereupon, such that the simulated gaming reels are more appealing to players. This can be accomplished at least in part through the use of simulated or "virtual" gaming reels that are presented based upon recorded samplings of actual physical reels. It is an additional advantage of the present invention to provide separate audio channels for the purpose of emulating physical reel